NISTTech

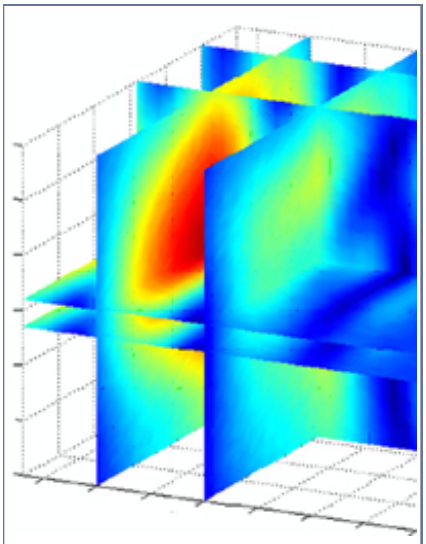
Ultra-Wideband Moisture Detector for Building Assemblies

Rapidly and non-destructively identify wet or moldy areas in buildings and homes

Description

Ultra wide-band radio waves non-destructively detect moisture within the walls of a building. This technology sends a broad range of radio frequencies through typical construction to look for a "moisture" signature in the signal that is reflected back. Laboratory experiments demonstrated the new method can locate moisture pockets within one centimeter. By processing the reflected signals, the researchers can create detailed three-dimensional maps that highlight wet areas.

Images



Perspective 3D view of a mocked-up wall section. Red circular area at left indicates moisture inside a wall. (Intelligent Automation Inc.)

Applications

- **Building and construction**
  water intrusion and mold detection. leaky pipe detection.

Advantages

- **Savings**
  Save time and money while locating mold and wet areas.
- **Non-destructive**
  Safe for dwellings and buildings.

Abstract

A non-destructive method enables the detection of moist areas located inside a building wall or the like. A transmitter generates a series of ultra-wideband pulses that are sent to an antenna unit, preferably in the form of an array that includes a plurality of switchable antenna pairs. The antenna unit directs the pulses toward the building structure and receives pulses that are reflected from the structure. Computational algorithms process the reflected pulses received by the antenna unit and produce an output, typically in the form of visual map that can be used to identify the locations of excessive moisture in the wall or structure.

Inventors

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Citations

1. W.M. Healy. E.N. Van Doorn. A Preliminary Investigation on the Use of Ultra-Wideband Radar for Moisture Detection in Building Envelopes. ASHRAE Transactions. Vol. 110, Part 2, pp. 95-105, 2004.

Related Items

- Detection of Moisture Accumulation in Wall Assemblies Using Ultra-Wideband Radio Signals
- In-Situ Measurement of the Moisture Content of Building Materials Using Ultra-Wideband Radio Waves
- Moisture Sensor Technology- A Summary of Techniques for Measuring Moisture Levels in Building Envelopes
- Article: Radio Waves "See" Moisture in Wall

References

- U.S. Patent #7,236,120
- Docket: 04-014US

Status of Availability

This invention is available for licensing.

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